## CLAIMS

**We claim:**

1. A router suitable for use in transmitting a packet of data through a communication network wherein the best route through the network is determined at each node, said router comprising:

logic for identifying and extracting higher-layer information carried by at least one of the layers above the lowest three layers of a communication protocol of a received Packet;

a configuration table for associating the higher-layer information with lower-layer information carried by at least one of the lowest three layers of the communication protocol ; and

a routing table for determining routing of the packet, responsive to the lower-layer information.

2. The router of claim 1, wherein the higher-layer information comprises a protocol identifier and a port number.

3. The router of claim 1, wherein the lower-layer information comprises a type of service identifier.

4. The router of claim 3, wherein the higher-layer information comprises a protocol identifier and a port number.

5. The router of claim 1, wherein the lower-layer information is carried by Internet Protocol (IP).

6. The router of claim 1, wherein the higher-layer information is carried by Transmission Control Protocol (TCP).

7. The router of claim 1, wherein the logic comprises a protocol processing unit.

8. The router of claim 7, wherein the logic further comprises a forwarding processing unit.

9. A method for determining the route of a packet through a communication network, said method comprising the acts of:

a) extracting higher-layer information carried by at least one of the layers above the lowest three layers of a communication protocol of a packet;

b) associating the higher-layer information with lower-layer information carried by at least one of the lowest three layers of the communication protocol,

c) using the lower-layer information to select a route for the packet through the network by accessing a routing table containing a plurality of routes.

10. A method for determining the route of a packet through a communication network, said method comprising the acts of:

a) receiving a packet;

b) identifying and extracting higher-layer information carried by at least one of the layers above the lowest three layers of a communication protocol of the received packet;

c) associating the higher-layer information with lower-layer information carried by at least one of the lowest three layers of the communication protocol by accessing a configuration table; And

d) determining routing of the packet by accessing a routing table responsive to the lower- layer information.

11. The method of claim 10, wherein the higher-layer information comprises a protocol identifier and a port number.

12. The method of claim 10, wherein the lower-layer information comprises a type of service identifier.

13. The method of claim 12, wherein the higher-layer information comprises a protocol identifier and a port number.

14. The method of claim 10, wherein the lower-layer information is carried by Internet Protocol (IP).

15. The method of claim 10, wherein the higher-layer information is carried by Transmission Control Protocol (TCP).